Railway Safety Advisory Committee,

PTC Task Force

November 9, 2000

# *North American Joint Positive Train Control Program Update*

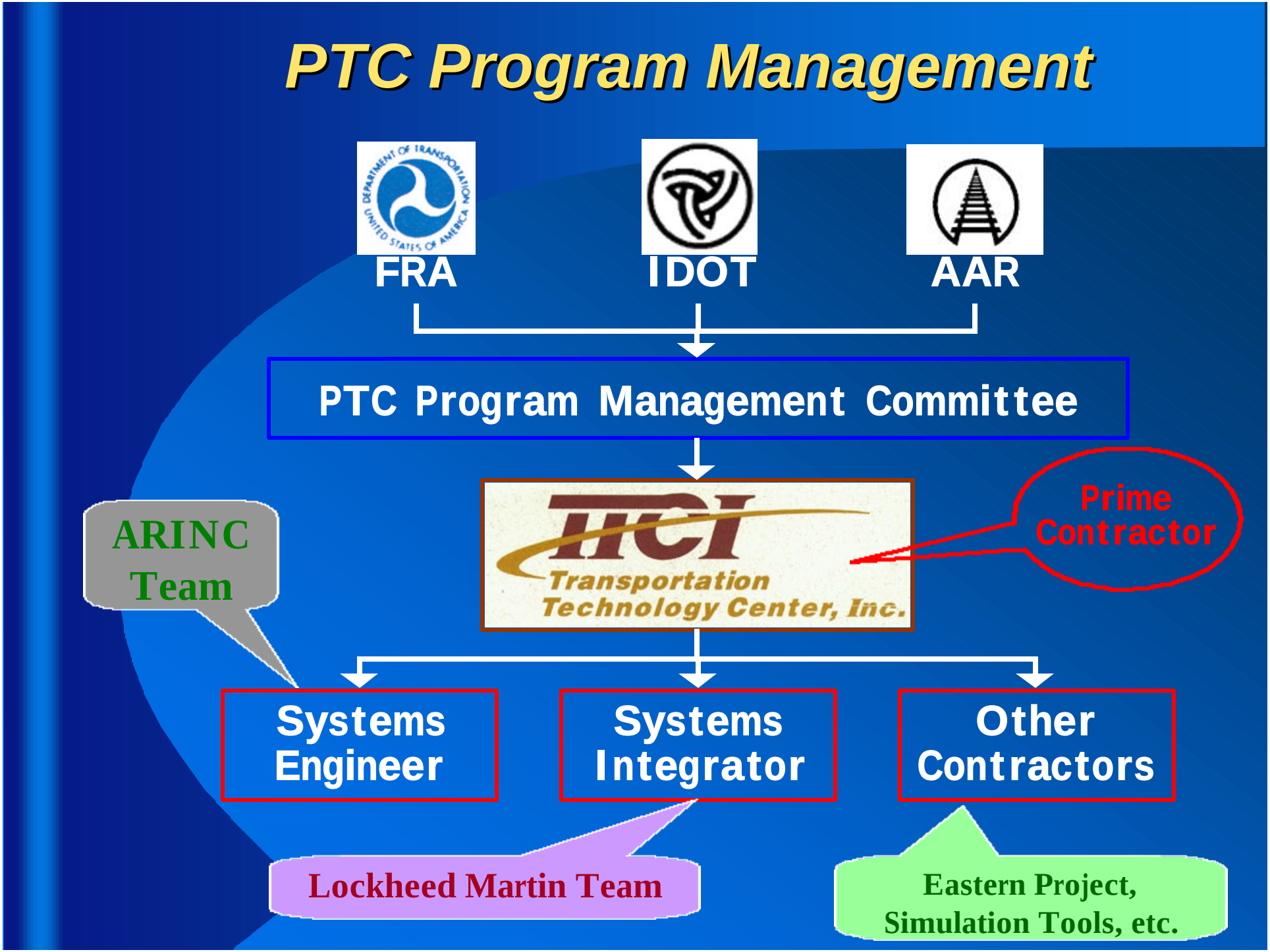
# *NAJPTC Program Update*

- **Bob Gallamore, TTCI – Program Overview**
- **Warren Klink, LM – IDOT PTC Safety Process**
- **Chris Goeren, LM – IDOT HMI Development**
- **Howard Moody, AAR – Industry Standards Development Process**

# Program Status

- RPF released last February
- System Developer/Integrator Team led by Lockheed Martin, now under contract

# PTC Program Management



# Program Status

- RPF released last February
- System Developer/Integrator Team led by Lockheed Martin, now under contract
- Support Contracts between TTCI and UPRR, Amtrak in the works
- Improvements to the IDOT test bed coming
- Standards development and configuration management activities on several fronts
- Human factors and training workshop next spring

# IDOT Pilot Implementation

- **Incremental Improvement**
  - Must make provision for non-communicating trains
  - Must be able to implement functions incrementally as standalone operations
  - Phased implementation
- **IDOT Project Planned for 7 Builds**
  - Completion at end of 2002
  - Ambitious timetable
  - Will provide operating experience at each “Build”

# Draft IDOT PTC Phasing & Timing

| | | |
|---|---|---|
| 1. Tracking | 2Q01 | Need comms infrastructure |
| 2. Speed Management | 3Q01 | Need CAD (Trains, Form A) |
| 3. Authority Management (Fixed Block) | 4Q01 | Need CAD (Form B + track & signal upgrades) |
| 4. Authority Management (Moving / Flexible Block) | 2Q02 | Requires robust sub-systems, stresses comms |
| 5. High Speed Operation | 3Q02 | Requires new crossing systems and track infrastructure upgrades |
| 6. Track Force Functions | 3Q02 | Deferred from earlier |
| 7. Predictive Enforcement | 4Q02 | Complex, need to minimize false enforcements |

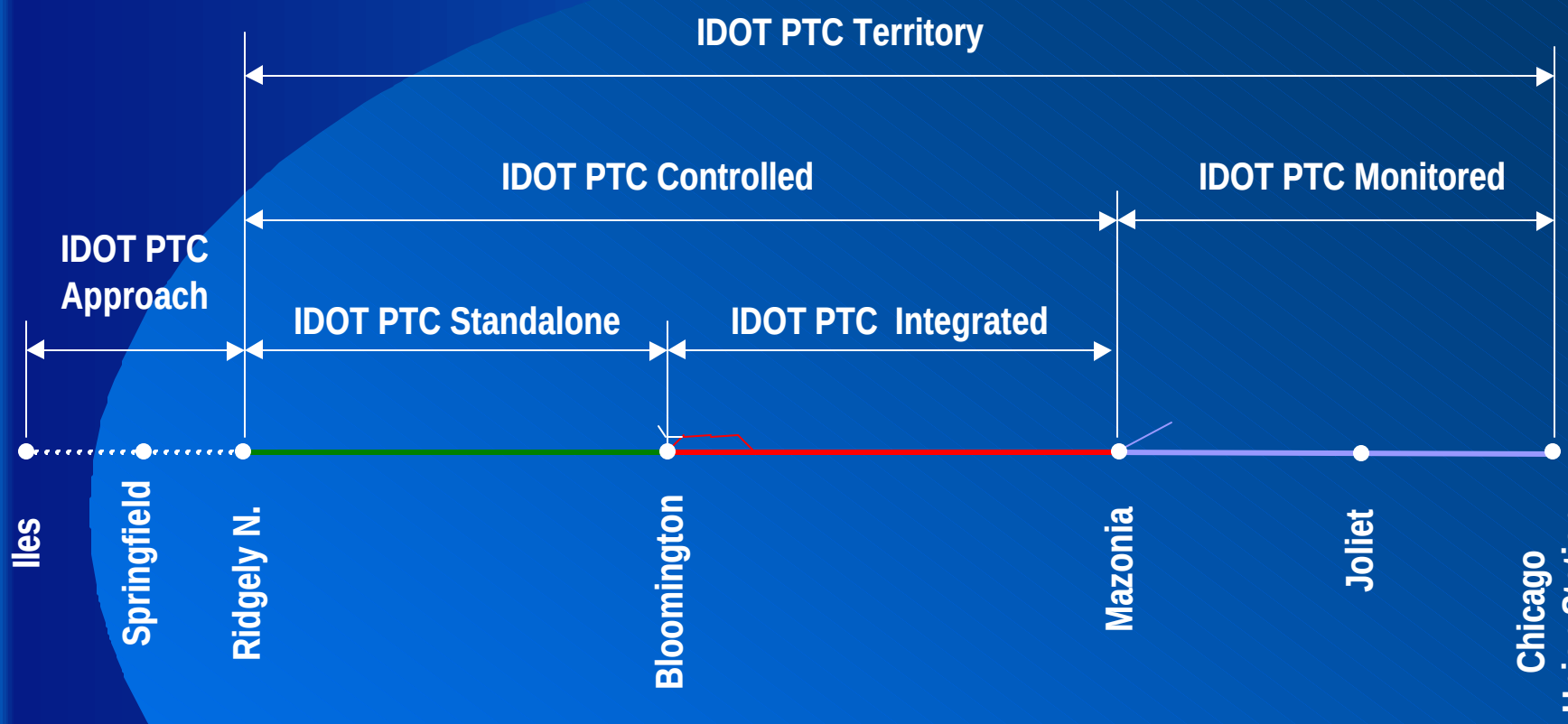
# *Summary: PTC Technology Challenges*

- **Stable requirements for cost-effective design**
- **Dispatching interface and new signal system**
- **Locomotive electronics standards – integration of Eastern Platform into IDOT**
- **RF communications standards, bandwidth, & affordable equipment**
- **Positioning & safe braking algorithms**
- **Software verification & validation, safety case**

# *Integrated vs. Standalone*

- **Integrated with CTC (Fixed Block Signals)**
  - **Field-based Safety Logic, Office Oversight**
  - **PTC Authorities must be in Sync with Signal Indications**
  - **Signals Provide Authority to 79 mph, PTC Display for > 79 mph**
  - **Enables Mix of Communicating and Non-Communicating Trains**
- **Standalone (Moving Block Operation)**
  - **Office *and* Field-based Safety Logic (PTC commands Field)**
  - **Enables Mix of Communicating and Non-Communicating Trains = Key to Migration and Realization of Moving Block Benefits**
  - **Communicating Trains Receive Flashing Green PTC Aspect, Indication = Obey PTC Display**

# Overview of IDOT PTC Territory




**Note:**

Spurs: non-controlled
Yard Tracks: non-controlled
Industry Tracks: non-controlled
CTC Sidings: controlled

# Summary: PTC Policy Challenges

- Interoperability consensus & cost-effective design – captured in industry PTC standards
- PTC rules management
- Data content, format, accuracy, & timeliness
- HSR grade crossing operation and safety
- Risk management / performance - based regulatory philosophy – Particularly, handling of non-communicating trains
- Aggressive schedule; full funding; liability

# Milestones Timetable

- Dec 15, 2000 — All system functional requirements analysis and allocation complete
- Mar 1, 2001 — Preliminary Design Review
- Feb 15, 2002 — Build 3 (up thru Location, Bulletins, Authorities) -- Compliance testing complete
- May 15, 2002 — Build 5 (up thru High Speed Operation and Xing Activation) -- Compliance testing complete
- Jun 15, 2002 — Product Safety Plan ready for submittal
- Sep 30, 2002 — Build 7 (thru Enforcement) -- Compliance testing complete
- Oct 15, 2002 — Installation of SDI-furnished office, locomotive, and wayside equipment finished
- Dec 31, 2002 — Completion of SDI testing, and system acceptance

**Railway Age Passenger on Freight Railroads Conference**

**October 15, 2000**

# *Questions?*

*Bob Gallamore, TTCI*